

## CLAIMS

What is claimed is:

- 5           1       A method of manufacturing a system for treating a vascular condition, comprising:
  - providing a catheter, the catheter including an inflatable balloon;
  - positioning a stent over the balloon;
  - applying an adhesive material between an inner surface of the stent
  - 10       and an outer surface of the balloon;
  - heating the adhesive material to above a melting point of the adhesive material; and
  - cooling the adhesive material to below a melting point of the adhesive material to provide an adhesive bond that retains the stent to the
  - 15       catheter during vascular delivery, wherein the stent is released from the balloon following inflation and deflation of the balloon at a treatment site.
- 20           2.       The method of claim 1 wherein the stent is formed with openings in its walls.
3.       The method of claim 1 wherein the adhesive material comprises a biocompatible material having a melting point below approximately one hundred sixty-five degrees Fahrenheit (165° F).
- 25           4.       The method of claim 1 wherein the adhesive material comprises poly(ethylene oxide).
5.       The method of claim 1 further comprising:
  - minimizing the balloon profile prior to positioning the stent over the
  - 30       balloon.

6. The method of claim 1 further comprising:  
dispersing the adhesive material throughout a fluid prior to  
application of the adhesive material.

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7. The method of claim 6 wherein approximately one gram (1 g) of  
adhesive material is dispersed throughout approximately one hundred cubic  
centimeters (100 cc) of fluid.

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8. The method of claim 6 wherein approximately three grams (3 g) of  
adhesive material is dispersed throughout approximately twenty cubic  
centimeters (20 cc) of fluid.

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9. The method of claim 6 further comprising:  
after dispersing the adhesive material throughout the fluid, heating  
the adhesive material and fluid to dissolve the adhesive material in the fluid.

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10. The method of claim 9 wherein heating the adhesive material and  
fluid to dissolve the adhesive material in the fluid comprises heating the adhesive  
material to a temperature in the range of ninety-five degrees Fahrenheit (95° F)  
to one hundred five degrees Fahrenheit (105° F) for a time duration of  
approximately ninety (90) minutes.

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11. The method of claim 6 wherein the fluid comprises water.

12. The method of claim 1 further comprising:  
positioning a sheath over the stent prior to application of the  
adhesive material.

13. The method of claim 12 wherein the sheath comprises a single tubular member.

5           14. The method of claim 12 wherein the sheath comprises a plurality of tubular members.

10           15. The method of claim 12 wherein applying an adhesive material between an inner surface of the stent and an outer surface of the balloon comprises introducing the adhesive material within the sheath such that the adhesive material flows between the inner surface of the stent and the outer surface of the balloon.

15           16. The method of claim 15 wherein introducing the adhesive material within the sheath comprises:  
                    loading the adhesive material into a syringe having a fine needle;  
                    inserting the needle within the sheath; and  
                    injecting the adhesive material through the needle within the sheath  
20           such that the adhesive material coats at least a portion of the outer surface of the balloon.

17. The method of claim 12 further comprising:  
                    removing the sheath after cooling the adhesive material.

25           18. The method of claim 1 further comprising:  
                    crimping the stent onto the balloon prior to heating the adhesive material.

19. The method of claim 1 further comprising:  
crimping the stent onto the balloon prior to applying the adhesive  
material between the inner surface of the stent and the outer surface of the  
balloon.

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20. The method of claim 1 further comprising:  
maintaining the balloon in a partially inflated configuration while  
heating and cooling the adhesive material.

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21. The method of claim 1 wherein the adhesive material is heated  
at a temperature of approximately one hundred sixty-five degrees Fahrenheit  
(165° F)

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22. The method of claim 1 wherein the adhesive material is heated for  
a time duration of approximately three minutes.